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CONFIDENTIAL

997165

[redacted]

25X1A

TID/TAB - 20/65
11 February 1965

25X1A

MEMORANDUM FOR: Assistant for Plans and Development Staff

SUBJECT: Evaluation of [redacted] Interchangeable Rhomboid Stereoscope

REFERENCE: NPIC/P&DS-39/65 Memo dated 29 January 1965

1. The Technical Analysis Branch evaluated the [redacted] Rhomboid Stereoscope beginning on 18 January 1965 for a period of five days. The following are the results of that evaluation. 25X1A

a. TAB personnel found the stereoscope to be a versatile instrument that would greatly add to the Branch's stereoscopic viewing capabilities.

b. The optical qualities of the stereoscope's viewing system were found to be very good. The range of magnification and available resolution proved adequate to meet the general requirements of the Branch.

c. The main objection, as forewarned by P&DS, was the way the stereoscope was mounted. The Technical Analysis Branch feels that the usefullness of the stereoscope would be increased if the following suggestions were incorporated into the base mount:

(1) Translation of entire optical system in X as well as in Y direction.

(2) The illumination source should be included as an integral part of base mount.

(3) The illumination must be adjustable and maximum intensity must provide adequate lighting for viewing heavy density film (3.0).

(4) Illumination should consist of two general independent adjustable areas each approximately $9\frac{1}{2}$" x 18" ($9\frac{1}{2}$" width perpendicular to viewing eyepieces) or one 18" x 18" area with at least twelve rows of on/off adjustable lights. The latter system would eliminate unnecessary light when viewing smaller format film.

(5) Heat produced by illumination sources must be adequately dispersed so as not to cause film warping.

Declass Review by NIMA / DoD

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GROUP 1
Excluded from automatic downgrading and declassification

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(6) Provisions should be made for base mount to handle two spools of roll film each capable of handling 500 foot of film with film widths varying from 70 mm to $9\frac{1}{2}$ inches.

(7) Film should be translated normal to viewing eyepieces.

(8) Base mount should bemade of light-weight material to facilitate easy movement or better still the base components could be made an integral part of a portable and height adjustable table.

(9) If possible a simple film hold down system would be desirable to facilitate the viewing of chip film. The introduction of glass between the film and optics would probably degenerate the image resolution enough to make a glass hold down system far inferior to a vacuum hold down system.

(10) Safety features must be incorporated into the base mount that would prevent damage of the optical elements.

(11) The base mount must be constructed to eliminate all possible vibrations because at high magnification the system vibrations become very apparent when viewing the imagery.

d. Attached to this memo is a crude, freehand drawing of TAB's general concept of a base mount with respect to the optical elements. The drawing does not attempt to depict any true structural detail and is only to be used as a rough guide to a general idea.

e. The optical system of the stereoscope, as previously stated, was found to be very good. However, it was felt that the addition of anamorphic optics could possibly increase the capabilities of the instrument. Likewise the optical system could be made more versatile if a means were provided to accommodate large differences (6:1) in scale between conjugate images.

f. The following few minor deficiencies were noted during the evaluation of the optical system. These presented inconveniences to the viewer more than anything else and probably could be corrected by minor adjustments.

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(1) Right eyepiece is hard to keep in focus.

(2) Adjustment of left eye focus produces an image rotation of left field.

2. The intent of this memo is to convey to P&DS only the basic and general ideas the Technical Analysis Branch has about the Rhomboid Stereoscope. The ideas presented in this evaluation may prove to be impractical from an operation and/or cost standpoint. The TAB personnel are, therefore, more than willing to discuss their evaluation with P&DS personnel and perhaps arrive at set of design objectives that will best meet the fundamental requirements of the instrument.

[redacted] 25X1A

Chief, Technical Analysis Branch

Attachment:
a/s

Distribution:
Orig. - Addressee, Attn: [redacted] 25X1A
1 - Chief, TID

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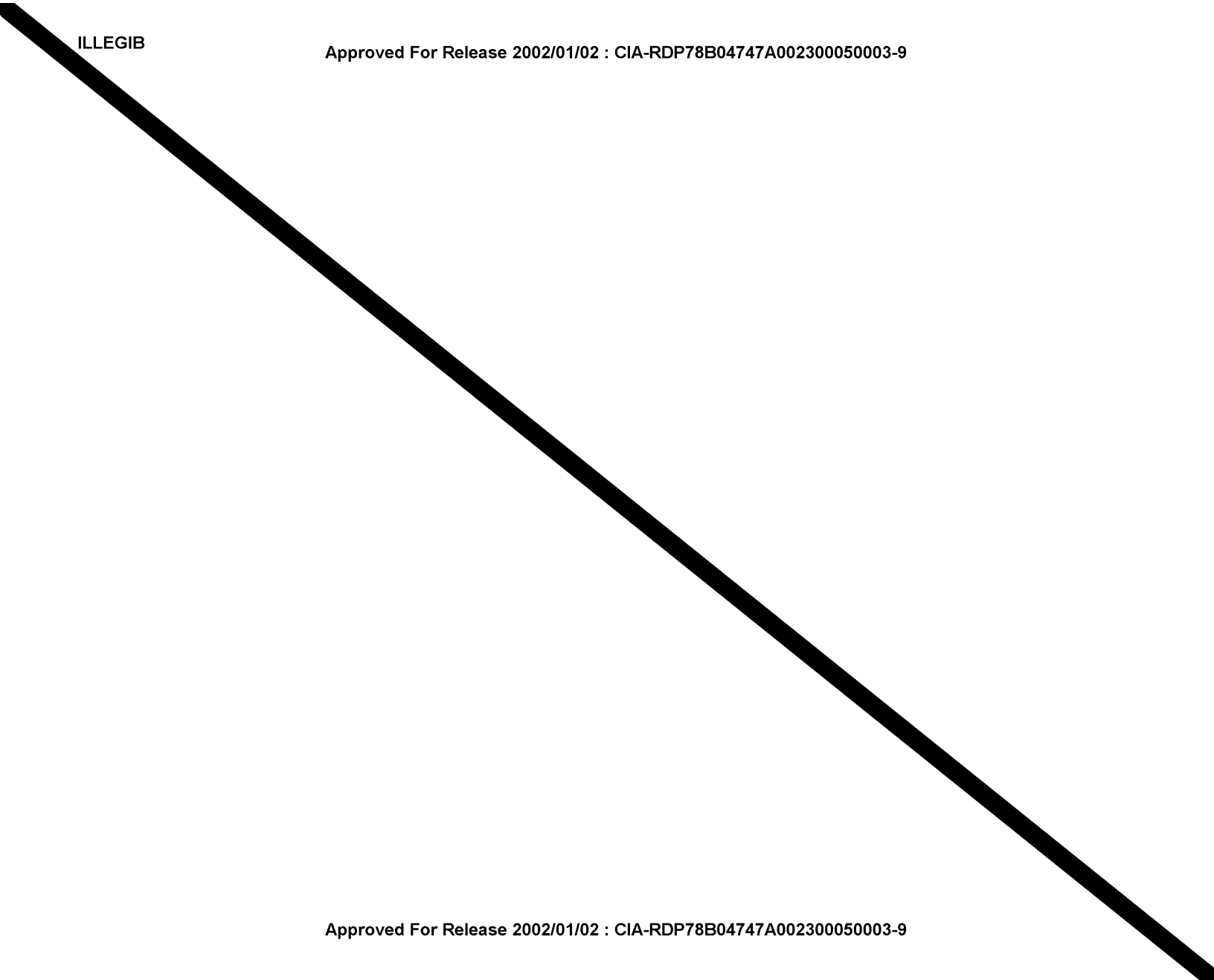

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